Message Text

CORRECTED COPY (PARA 11)

LIMITED OFFICIAL SECTION 1 OF 2 USNATO 6266

E.O. 11652: N/A

TAGS: ECON, EFIN, NATO

SUBJ: ECONADS: EFFECTS OF INFLATION ON DEFENSE EXPENDITURES

REF: A) WORKING PAPER AC/127-WP/445

B) USNATO 6065

C) STATE 267887

D) USNATO 6236

1. QUOTED IN PARA 2 IS THE TEXT OF THE PROPOSED REPORT TO NAC ON EXPERTS' DISCUSSIONS ON DEVELOPING DEFLATORS FOR ANALYSIS OF DEFENSE EXPENDITURES BY NATO MEMBERS. IN HIS COVER NOTE, ECONOMIC COMMITTEE CHAIRMAN STATES "IN SUBMITTING THE ATTACHED DRAFT, I WOULD REMIND THE COMMITTEE THAT WE SHOULD LIKE TO SEE THIS DOCUMENT INCLUDED ON THE COUNCIL'S AGENDA BEFORE THE DECEMBER MINISTERIAL MEETING." AS REPORTED IN REF (D), DRAFT IS ON THE NOVEMBER 20 ECONADS AGENDA.

2. BEGIN TEXT OF DRAFT REPORT TO NAC:

EFFECT OF PRICE CHANGES ON DEFENCE LIMITED OFFICIAL USE LIMITED OFFICIAL USE

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EXPENDITURES OF NATO MEMBER COUNTRIES

1. IN THE EARLY YEARS OF THE RECENT DECADE, PRICE RISES IN NATO MEMBER COUNTRIES CONSIDERED AS A WHOLE DID NOT RXCEED

2 TO 3 PCT A YEAR, A RATE WHICH CAN BE EXPLAINED BY THE UNAVOIDABLE STRESSES TO WHICH ECONOMIES ENJOYING A SUSTAINED GROWTH RATE ARE SUBJECT. TOWARDS THE END OF THIS PERIOD, THESE RISES BECAME MORE PROUNOUNCED AND, AFTER 1971, GAINED MOMENTUM MAINLY BECAUSE OF THE SHARP RISE IN THE COST OF FACTORS OF PRODUCTION.

- 2. STATISTICS SHOW THAT, IN MOST COUNTRIES, THE RATE OF INFLATION HAS BEEN HIGHER IN THE PUBLIC CONSUMPTION SECTOR WHICH COMPRISES DEFENCE EXPENDITURE THAN FOR DOMESTIC PRODUCTION AS A WHOLE. GIVEN THE VARIED NATURE OF DEFENCE EXPENDITURE, IT IS EVEN POSSIBLE THAT, IN CERTAIN COUNTRIES OR AT CERTAIN TIMES, PRICE RISES HAVE BEEN GREATER IN THE DEFENCE SECTOR THAN FOR THE OTHER CATEGORIES OF CURRENT PUBLIC EXPENDITURE.
- 3. FOR THE PAST TWO YEARS THE ECONOMIC COMMITTEE HAS BEEN TRYING TO DEVELOP A METHODILOGY FOR MEASURING PRICE RISES IN THE MILITARY SECTOR IN A WAY THAT MAKES INT POSSIBLE, BY MEANS OF APPROPRIATE DEFLATORS, TO OBTAIN A MORE ACCURATE ESTIMATE OF THE REAL VOLUME OF EXPENDITURE DEVOTED TO DEFENCE. IT IS HOPED THAT THIS WORK WILL HELP THE DEFENCE PLANNING DIVISION, WHICH WANTS AN IMPROVED METHOD OF ASSESSING PRICE CHANGES RELATING TO DEFENCE EXPENDITURE.
- 4. UNFORTUNATELY, THE DEFINITION OF PRICE INDICES SPECIFICALLY APPLICABLE TO DEFENCE EXPENDITURE RAISES SERIOUS METHODOLOGICAL DIFFICULTIES. BECAUSE SUCH EXPENDITURE IS HOGHLY DIVIERSIFIED, THE ORIGIN OF PRICE RISES IS EXTREMELY VARIED. FURTHERMORE, SOME OF THE INCREASED COSTS ARE OFFSET BY GREATER PRODUCTIVITY, IMPROVEMENTS IN THE QUALITY OF EQUIPMENT AND THE INCREASED EFFECTIVENESS OF CERTAIN WEAPONS, BUT THESE FACTORS ARE VERY DIFFICULT TO ASSESS.
- 5. FOR THE SAKE OF SIMPLICITY, THE STUDIES CARRIED OUT BY NATIONAL EXPERTS AT THE REQUEST OF THE ECONOMIC COMMITTEE HAS SO FAR BEEN CONFINED TO THE CALCULATION OF TWO PRICE INDICES, ONE FOR ALL TYPES OF PERSONNEL REMUNERATION, AND THE SECOND FOR ALL OTHER DEFENCE EXPENDITURE. BUT EVEN IN THIS VERY CONDENSED LIMITED OFFICIAL USE

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FORM, THE NATIONAL INDICES PREPARED SO FAR ARE STILL NOT EASILY COMPARABLE. THE EFFORTS TO CO-ORDINATE THE METHOD OF CALCULATING THESE TWO GENERAL INDICES SHOULD THEREFORE BE CONTINUED, AND AT THE SAME TIME THE DIFFERENT COUNTRIES COULD ATTEMPT TO DEFINE INDICES REPRESENTATIVE OF CHANGES IN THE REMUNERATION OF SEVERAL MAJOR PERSONNEL CATEGORIES AND IN THE PRICES OF SEVERAL MAJOR EQUIPMENT CATEGORIES.

6. THE FIRST RESULTS OF THE WORK SHOWED THAT THE INFLATION RATES FOR MILITARY EXPENDITURE WERE GENERALLY MUCH HIGHER THAN THOSE FOR CONSUMER PRICES, BUT IW HAS NOT BEEN POSSIBLE TO EXPLAIN WHY THIS IS SO.

- 7. A MORE INTERESTING CONCLUSION TO EMERGE, AS A RESULT OF THE USE OF THE TWO INDICES, IS THAT FOR SEVERAL YEARS NOW PERSONNEL COSTS HAVE BEEN ACCOUNTING FOR A GROWING SHARE OF MILITARY EXPENDITURE BECAUSE PAY HAS GONE UP IN LINE WITH WAGES IN THE CIVILIAN SECTOR. GENERALLY SPEAKING, THE RISE IN PERSONNEL COSTS IN MAY MEMBER COUNTRIES OF THE ALLIANCE WAS IN THE REGION OF 50 TO 80 PCT IN 1974 (SEE TABLE 1 BY COMPARISON WITH 1970, I.E. A MEAN INCREASE OF BETWEEN 10 AND 17 PCT A YEAR. THIS RISE REFLECTS THE GENERAL EFFECTS OF INFLATION BUT ALSO, IN SOME CASES, A RISE IN LIVING STANDARDS; TO SOME EXTENT, IT ALSO REFLECTS INCREASED TECHNICAL PROFICIENCY AND CHANGES IN CATEGORY. ACCORDING TO SOME EXPERTS, PRODUCTIVITY HAS RESEIN SOME 20 PCT OVER THE WHOLE OF THE PERIOD UNDER CONSIDERATION. MOST EXPERTS, HOWEVER, REJECT THE IDEA THAT IT IS POSSIBLE TO MEASURE INCREASES IN THE PRODUCTIVITY OF MILITARY PERSONNEL.
- 8. PRICE INCREASES FOR ALL MILITARY EXPENDITURE OTHER THAN PAY RESULTED IN A RISE F BETWEEN 40 AND 60 PCT IN 1974 BY COMPARISON WITH 1970, OR AN AVERAG OF BETWEEN 6 AND 16 PCT A YEAR. THIS RISE ENCOMPASSES THE COST OF QUALITYIMPROVEMENTS WHICH ARE NOT ATTKRIBUTABLE TO INFLATION AS SUCH.
- 9. ONE CONSEQUENCE OF THE DIVERGENT TREND OF NOMINAL PERSONNEL COSTS ON THE ONE HAND, AND OF THE REMAINING CATEGORIES OF EXPENDITURE ON THE OTHER, HAS BEEN THAT IN BUDGETS WHICH CANNOT EASILY BE REVISED IN THE COURSE OF THE YEAR, THE PROPORTION OF DEFENCE EXPENDITURE ACCOUNTED FOR BY PERSONNEL COSTS HAS INCREASED AT THE EXPENSE OF EQUIPMENT DEVELOPMENT AND LIMITED OFFICIAL USE

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MODERNISATION.

- 10. ANOTHER IMPORTANT EFFECT OF INFLATION HAS BEEN THAT FOR DEFENCE EXPENDITURE AS A WHOLE THE INCREASES IN BUDGETARY APPROPRIATIONS DURING THE PERIOD 1970-1974 HAVE BEEN PARTLY, AND SOMETIMES COMPLETELY, SWALLOWED UP BY THE RISE IN PRICES. THIS, OF COURSE, MEANS THAT THE REAL VOLUME OF THE DEFENCE BUDGET HAS INCREASED AT A VERY LOW ANNUAL RATE IN MOST CASES AHD HAS EVEN GONE DOWN SLIGHTLY IN OTHERS.
- 11. A PRIMARY PURPOSE OF THE STUDY WAS TO DECIDE WHETHER
 OR NOT PRICE RISES WERE REFLECTED WITH SUFFICIENT ACCURACY IN THE
 DEFLATORS APPLIED BY MEMBER COUNTRIES IN THEIR KREPLIES TO
 THE DEFENCE PLANNING QUESTIONNAIRES, BUT IT IS STILL TOO EARLY
 TO REPLY TO THIS QUESTION. ONLYFIVE COUNTRIES ACTUALLY PROVIDED
 SPECIFIC DEFENCE DEFLATORS FOR THE PERIOD 1970-1974. THESE
 DEFLATORS ARE GENERALLY GREATER THAN THOSE APPEARING IN THE
 DEFENCE PLANS OF THE SAME COUNTRIES, BUT STATISTICAL ANALYSIS
 SHOWS THAT ONLY IN THE CASE OF ONE COUNTRY WERE THEY SIGNIFICANTLY
 DIFFERENT (SEE AMMEND. HOWEVER, ONE GENERAL IMPRESSION EMERGES

FROM THE FIRST PHASE OF THIS STUDY; IN 19 OF THE 26 CASES OBSERVED, THE REPLIES TO THE DEFENCE PLANNING QUESTIONNAIRES REQPORT PRICE RISES WHICH ARE LOWER THAN THOSE MENTIONED DURING THE EXERCISE. IT WOULD THEREFORE APPEAR THAT, IN THE REPLIES TO THE DEFENCE PLANNING QUESTIONNAIRES, THE EFFORTS ACTUALLLY MADE ARE BEING GREATLY OVERESTIMATED ALTHOUGH THE EXTENT TO WHICH THEY ARE OVERESTIMATED VARIES WIDELY FROM ONE COUNTRY TO ANOTHER AND FROM ONE YEAR TO ANOTHER. THIS DISCOVERY, AND THE FACT THAT THE SYSTEM INTRODUCED ON THE ADVICE OF EXPERTS SHOULD LEAD TO THE USE OF TWO SPECIFIC INDICES ((PERSONNEL COSTS AND OTHER EXPENDITURE) INSTEAD OF ONLY ONE, IS AN ENCOURAGEMENT TO PERSERVERE WITH CURRENT EFFORTS TO ESTABLISH SPECIFIC AND MUTUALLY COMPARABLE INDICES FOR USE BY ALL THE COUNTRIES CONCERNED.

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ACTION EUR-12

INFO OCT-01 ISO-00 CIAE-00 PM-04 INR-07 L-03 ACDA-05

NSAE-00 PA-01 SS-15 PRS-01 SP-02 USIA-06 TRSE-00

SAJ-01 DODE-00 EB-07 COME-00 FRB-03 OMB-01 /069 W 063685

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ANNEX TO AC/127-WP/445

SIGNIFICANCE OF DIFFERENCES OBSERVED BETWEEN DEFENCE PLANNING DEFLATORS AND THOSE USED DURING THE STUDY ON INFLATION (SEE TABLE 1)

- 1. IN ORDER TO ASECRTAIN WHETHER THE DIFFERENCES OBSERVED BETWEEN THE INDICES ARE SYSTEMATIC OR WHETHER, ON THE CONTRARY, THEY SHOULD BE ATTRIBUTED TO CHANCE (IN THE STATISTICAL SENSE OF THE TERM), IT IS NECESSARY TO CHECK THAT THE SAMPLES MADE UP OF THE TWO STATISTICAL SERIES AVAILABLE FOR THE PRIOD 1970-1974 ARE NOT UNIFORM, I.E. THAT THEY CANNOT BE DERIVED FROM THE SAME GAUSSIEN PARENT POPULATION.
- 2. STUDENT'S T TEST CAN PROVIDE AN ANSWER TO THIS QUESTION. IT HAS BEEN APPLIED INITIALLY BY TAKING INTO CONSIDERATION THE AVERAGE ANNUAL 1970-1974 GROWTH RATES OF THE PRICE INDICES ESTABLISHED FOR THE EXERCISE AND THOSE DERIVED FROM THE REPLIES TO THE DEFENCE PLANNING QUESTIONNAIRE. IT

EMERGES THAT THE MEAN OF EACH OF THE SAMPLES ESTABLISHED IN THIS WAY IS NOT SIGNIFICANTLY DIFFERENT; THE VALUE FOUND FOR T WAS 1.24, WHICH IS WELL UNDER THAT GIVEN BY THE TABLE OF T FOR 8 DEGREES OF FREEDOM AND THE PROBABILITY LEVEL OF 10 PCT (T EQUALS 1.86).

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- 3. FURTHERMORE, THE APPLICATION OF WILCOXON'S TEST TO THE SAME SAMPLES CONFIRMED THAT THE DIFFERENCE BETWEEN THE TWO MEANS WAS NOT SIGNIFICANT.
- 4. A SECOND STAGE OF THE OPERATION CONSISTED IN STUDYING THE DATA RELATING TO EACH COUNTRY CONSIDERED SEPARATELY. IN THE CASE OF THREE COUNTRIES (OUT OF THE FIVE WHICH SENT IN FIGURES) FOR WHICH THERE WAS APARENTLY A BIG DEVIATION BETWEEN THE ANNUAL GROWTH RATES OF INDEX (A) AND INDEX (B), STUDENT'S T TEST WAS APPLIED, USING THESE TWO SERIES OF GROWTH RATES AS SAMPLES.
- 5. THE CALCULATIONS SHOWED THAT THE CHANCE THEORY COULD BE REJECTED ONLY IN THE CASE OF ONE COUNTRY. (THE VALUE FOUND FOR T WAS 4.2 FOR 8 DEGREES OF FREEDOM.) AN ADDITIONAL STUDY, USING SNEDECOR'S F TEST, CONFIRMED THAT THE NON-UNIFORMITY OF THE TWO SAMPLES THUS REVEALED COULD BE TRACED TO A SIGNIFICANT DIFFERENCE IN THEIR MEANS (AND NOT IN THEIR VARIANCES).
- 6. IN THE TWO OTHER CASES, IT WAS NOT POSSIBLE TO SHOW WITH STUDENT'S T TEST THAT THE CHANCE THEORY COULD BE REJECTED, AND CONSEQUENTLY IT CANNOT BE AFFIRMED THAT THE DIFFERENCES IN THE MEANS OF THE SAMPLES MADE UP OF THE TWO TYPES OF INDICES PECULIAR TO THESE TWO COUNTRIES ARE SIGNIFICANT. (THE T VALUES WERE 0.9 AND 0.7 RESPECTIVELY FOR 6 DEGREES OF FREEDOM.)
- 7. THIS LAST RESULT, WHICH IS AT FIRST SIGHT SURPRISING
 ESPECIALLY SINCE IN 19 OF THE 26 CASES OBSERVED THE REPLIES TO
 THE DEFENCE PLANNING QUESTIONNAIRES REPORTED LOWER PRICE RISES
 THAN THOSE MENTIONED IN TH EEXERCISE, CAN BE EXPLAINED
 STATISTICALLY BY THE HIGH DEGREE OF DISPERSION OF THE VALUES
 ABOUT THEIR MEAN AND THE RESULTING HIGH VALUE OF THE VARIANCES.
 IT IS VERY POSSIBLE, THEREFORE, THAT IF THE SAMPLES HAD BEEN
 LARGER, THE RESULTS OF THE STUDENT TEST WOULD HAVE BEEN DIFFERENT
 AND MIGHT PERHAPS HAVE HIGHLIGHTED THE SIGNIFICANCE OF THE
 DIFFERENCE IN THE AVERAGE ANNUAL GROWTH RATES OF INDICES (A)
 AND (B). IT WOULD BE INTERESTING TO APPLY THE SAME METHODOLOGY OVER A
 LONGER PERIOD LINKED TO A LARGER NUMBER OF COUNTRIES.

END TEXT OF DRAFT REPORT TO NAC.

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3. ILLUSTRATIVE TABLE 1, CALCULATED BY DE LA COMBE OF ECONOMIC DIRECTORATE, CLOAKS IDENTITY OF COUNTRIES CITED.

BEGIN TABLE TEXT:

TABLE I-- PRICE INDICES AND MEAN ANNUAL VARIATIONS(SELECTED BASE YEAR 1970 EQUALS 100)

A: INDICES ESTABLISHED IN THE COURSE OF THE EXERCISE (PRELIMINARY DATA).

B: INDICES DERIVED FROM REPLIES TO THE DEFENSE PLANNING QUESTIONNAIRE.

COLUMN I

PERSONNEL COSTS

INDEX 1974 ANNUAL VARIATION (PCT)

COUNTRY NO. 1 A 143.7 PLUS 9.4

COUNTRY NO. 2 A 163.7 PLUS 13.1

COUNTRY NO. 3 A 167.3 PLUS 13.7

COUNTRY NO. 4 A 175.8 PLUS 15.2

COUNTRY NO. 5 A 185.9 PLUS 17.0

COLUMN 2

OTHER DEFENCE EXPENDITURE

INDEX 1974 ANNUAL VARIATION (PCT)

COUNTRY NO. 1 A 135.6 PLUS 8.0

COUNTRY NO. 2 A 134.7 PLUS 6.3

COUNTRY NO. 3 A 148.0 PLUS 10.3

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COUNTRY NO. 4 A 157.2 PLUS 12.2

COUNTRY NO. 5 A 178.1 PLUS 16.3

COLUMN 3

TOTAL EXPENDITURE

INDEX 1974 ANNUAL VARIATION (PCT)

COUNTRY NO. 1 A 139.5 PLUS 8.7

B 135.0 PLUS 7.8

COUNTRY NO. 2 A 144.0 PLUS 9.5

B 129.1 PLUS 6.6

COUNTRY NO. 3 A 159.2 PLUS 12.3

B 157.3 PLUS 12.0

COUNTRY NO. 4 A 166.5 PLUS 13.6

B 148.8 PLUS 10.4

COUNTRY NO. 5 A 183.8 PLUS 16.8

B 160.6 PLUS 12.6

4. FYI: ACTUAL IDENTITY OF THE FIVE COUNTRIES IS: 1--US,

2--FRG, 3--NETHERLANDS, 4--UK, AND 5--ITALY. END FYI.

 $5.\ ACTION\ REQUESTED: GUIDANCE\ FOR\ NOVEMBER\ 20\ ECONADS\ MEETING.$

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Message Attributes

Automatic Decaptioning: X Capture Date: 18 AUG 1999 Channel Indicators: n/a

Current Classification: UNCLASSIFIED

Concepts: n/a Control Number: n/a Copy: SINGLE Draft Date: 18 NOV 1975 Decaption Date: 01 JAN 1960 Decaption Note: Disposition Action: RELEASED Disposition Action: RELEASED
Disposition Approved on Date:
Disposition Authority: GolinoFR
Disposition Case Number: n/a
Disposition Comment: 25 YEAR REVIEW
Disposition Date: 28 MAY 2004
Disposition Event:
Disposition History: n/a
Disposition Reason:

Disposition Reason: Disposition Remarks:

Document Number: 1975NATO06266 Document Source: ADS Document Unique ID: 00 Drafter: n/a

Enclosure: n/a Executive Order: N/A Errors: n/a Film Number: n/a From: NATO

Handling Restrictions: n/a

Image Path:

Legacy Key: link1975/newtext/t19751189/abbrznfr.tel Line Count: 353

Locator: TEXT ON-LINE

Office: n/a

Original Classification: LIMITED OFFICIAL USE

Original Handling Restrictions: n/a Original Previous Classification: n/a Original Previous Handling Restrictions: n/a

Page Count: 7

Previous Channel Indicators:

Previous Classification: LIMITED OFFICIAL USE

Previous Handling Restrictions: n/a
Reference: A) WORKING PAPER AC/127-WP/445 B) USNATO 6065 C) STATE 267887 D) USNATO 6236

Review Action: RELEASED, APPROVED Review Authority: GolinoFR

Review Comment: n/a Review Content Flags: Review Date: 30 APR 2003

Review Event:

Review Exemptions: n/a
Review History: RELEASED <30 APR 2003 by ShawDG>; APPROVED <01 MAY 2003 by GolinoFR>

Review Markings:

Margaret P. Grafeld Declassified/Released US Department of State EO Systematic Review 06 JÚL 2006

Review Media Identifier: Review Referrals: n/a Review Release Date: n/a Review Release Event: n/a **Review Transfer Date:** Review Withdrawn Fields: n/a

Secure: OPEN Status: NATIVE

Subject: ECONADS: EFFECTS OF INFLATION ON DEFENSE EXPENDITURES

TAGS: ECON, EFIN, NATO To: STATE

Markings: Margaret P. Grafeld Declassified/Released US Department of State EO Systematic Review 06 JUL 2006